sion, but it may be doubted whether the medical profession as a whole has fully realized its responsibility to the public in this matter. The unscrupulous agitation, which has at length come so perilously near to achieving an instalment of its purpose, has been aided by the prevalent ignorance of the public, and by the power of appeal to a sentiment which is strongly developed in all Englishmen—in medical men as in others. The dog has established a proper claim on man's sympathy and affection, and the public have the right to inquire whether its use for experiment is essential for the progress of medical science, and to be satisfied that the practise involves no significant amount of pain. The materials for assurance on both points are in the hands of every medical man who has thought about the matter and has made himself acquainted with readily accessible facts. The Research Defence Society has done valuable work, but the ordinary man or woman has more confidence in the friend with expert knowledge than in the publications of societies. He has the right to expect that his feelings, harrowed by an insistent campaign of misrepresentation, shall not be treated merely with good-humored tolerance. The plain facts of the case are easily made clear, and would be accepted by the vast majority of laymen from the medical advisers whom they trust. If lay opinion had not been left so much at the mercy of a mendacious agitation, it is incredible that even a tired and apathetic remnant of the House of Commons would have allowed this bill to pass its second reading almost without discussion.—*The British Medical Journal.*

SCIENTIFIC BOOKS

The Game Birds of California. Contribution from the University of California, Museum of Vertebrate Zoology. By Joseph Grinnell, Harold Child Bryant and Tracy Irwin Storer. University of California Press, Berkeley, 1918. Large 8vo. Pp. i–x + 1–642, 16 colored plates and 94 text-figures. Price, cloth, $6.00 net.

While the conservation of the wild game of a state is one of the most important problems with which the commonwealth has to deal, it is rarely that it receives the expert attention that it should and that is usually possible. Too often the fish and game committees of the legislature and the game commissions are composed of men who are merely sportsmen, interested of course in the preservation of game according to theories that they as shooters of game have conceived, but not cognizant of the more fundamental principles which only the trained zoologist or conservationist understands.

California is to be congratulated upon securing the services of such competent zoologists as Dr. Grinnell and his associates at the University of California—Dr. Bryant and Mr. Storer—in preparing this admirable volume upon the game birds of the state.

The plan of the work is well conceived and is carried out with a painstaking regard for accuracy and uniformity of treatment. Under each species we have full descriptions of the various plumages, with special emphasis on "marks for field identification," the call notes, nest and eggs are then described and a statement of the distribution of the species in general, as well as in California, is added. Then follows a general account of the life history of the bird, its food, actions, etc., with now and then pertinent extracts from the works of various authors. This systematic portion of the work naturally forms the bulk of the volume, and is a repository of information which will benefit readers far beyond the boundaries of California, since the list of game birds of the various states of the union includes many of the same species, and Dr. Grinnell and his associates have spared no pains in gathering together all the information that was to be had. The published literature and manuscript records have been exhaustively studied and the museums of the whole country have been visited in order to secure descriptions of the various plumages that game birds present at different ages and seasons.

The earlier chapters of the work discuss the more general problems of game preservation and their careful study by those framing game legislation in all parts of the union will be well worth while.

The tremendous destruction of game in California is well known, but few probably realized its extent until the actual figures were placed before them. When we read that 72,000 ducks were handled by one Game Transfer Company at San Francisco in the season of 1910–11 and 20,000 geese by another company in the preceding year, while the estimated number of these birds sent to market has decreased from 350,000 in 1911–12 to 125,000 in 1915–16, we can readily understand why there is serious apprehension as to the future of the game supply!

Ducking clubs and their influence upon the preservation of wild bird life come in for very careful consideration. It is freely granted that they provide and maintain better feeding grounds for the ducks while additional food is supplied in the form of "bait." Indiscriminate and illegal gunnery is prevented on the areas under the club's control and hunting is limited to a few days a week and to relatively few shooters. At other times the grounds form an admirable refuge for the birds.

On the other hand, the attractiveness of the protected grounds concentrates the duck population in a limited area where a very heavy toll is levied, and the shooting is done by highly trained marksmen with the best of weapons, and large annual bags result. And the authors consider that the extermination of the ducks is far more rapid than when they remain scattered over wide areas, and are hunted by gunners of varying skill.

Other topics connected with conservation are discussed in the same careful manner, while the treatment of the life histories of the various species is very full. Turning to the chapter on the Valley Quail we find, besides the description of the bird, nest, habits, etc., evidence to show that the males act as sentinels; while it is pointed out that the species lays more eggs than any other game bird and suffers corresponding mortality and means of controlling the latter are suggested. The relation of the species to agriculture is considered carefully and also the problem of hunting this bird for the market.

This is a work of reference which should be in every western library and one that should be available to conservationists the country over.

The publishers have done their part of the work admirably and the result is a very handsome volume, beautifully illustrated by sixteen color plates of game birds from paintings by Louis Agassiz Fuertes and Major Allan Brooks.

W. S.

SPECIAL ARTICLES

THE SUSCEPTIBILITY OF A NON-RUTACEOUS HOST TO CITRUS CANKER

CITRUS canker is a disease recently introduced into the Gulf states from Japan. At present attempts are being made to eradicate this disease entirely in those states, by burning trees on which infections are found, thus eliminating the sources of new infection.

The senior writer has shown[1] that citrus canker is not closely confined to the species of *Citrus* as hosts but affects plants of a large number of other genera of the Rutaceæ. It is believed that this work has been corroborated by workers in the United States.

More recently inoculations of plants outside of the Rutaceæ have been attempted. The lansones (*Lansium domesticum*) of the Meliaceæ, a tree cultivated in the Philippines for its edible fruit, was the first non-rutaceous plant employed. Needle punctures made through a suspension of *Pseudomonas citri* placed upon the actively growing midribs of leaves and upon the petioles and main stems of this plant have produced swellings which later cracked and erruptions of tissue have resulted. In some cases the swellings have been surrounded with the yellow halo typical of canker upon citrous hosts. Control inoculations made with river water under the same conditions have remained negative.

Pseudomonas citri has been reisolated from such lesions, the numbers of colonies in the isolation plates indicating that there was abundant reproduction of the organism in the lansones tissue.

[1] "Further Data on the Susceptibility of Non-Rutaceous Plants to Citrus Canker," *Journal of Agricultural Research*, Volume 15, No. 12, December 23, 1918.